

CLAIM AMENDMENTS

1. (Currently Amended) A magnetic actuator comprising:
a first yoke ~~made of~~ including an assembly of laminated metal sheets;
a second yoke affixed to the first yoke;
a permanent magnet;
an armature ~~which is provided~~ located inside the first yoke and ~~made~~ movable in reciprocating motion over a ~~specific~~ stroke between a first position and a second position, along a first direction;
at least one coil; and
an actuating mechanism ~~for~~ causing the armature to move along ~~said~~ the first direction, wherein

~~the armature constitutes~~ a first magnetic circuit of a flux generated by the coil ~~together with~~ includes the armature and the first yoke and moves toward one of ~~said~~ the first and second positions when the coil is excited,
~~the permanent magnet is located in~~ a second magnetic circuit of a flux generated by the permanent magnet, ~~the second magnetic circuit passing through~~ includes the permanent magnet, the first yoke, the second yoke, and the armature, and
~~wherein~~ the armature is held at one of ~~said~~ the first and second positions by the flux generated by the permanent magnet.

2. (Currently Amended) A magnetic actuator comprising:
a first yoke ~~made of~~ including an assembly of laminated metal sheets;
a second yoke affixed to the first yoke;
a permanent magnet affixed to the second yoke;
an armature ~~which is provided~~ located inside the first yoke and ~~made~~ movable in reciprocating motion over a ~~specific~~ stroke between a first position and a second position along a first direction;
a first coil fitted to the first yoke; and
a second coil fitted to the first yoke, wherein

~~the armature constitutes~~ a first magnetic circuit of a flux generated by one of the first and second coils ~~together with~~ includes the armature and the first yoke and moves toward one of ~~said~~ the first and second positions when one of the first and second coils is excited, ~~the permanent magnet is located in~~ a second magnetic circuit of a flux generated by the permanent magnet, ~~the~~

~~second magnetic circuit passing through~~ includes the permanent magnet, the first yoke, the second yoke, and the armature, and

wherein the armature is held at one of ~~said~~ the first and second positions by the flux generated by the permanent magnet.

3. (Currently Amended) The magnetic actuator according to claim 1, wherein the permanent magnet is ~~provided~~ located between the first yoke and the second yoke, at an end surface of the second yoke facing the armature, ~~or between elements constituting the second yoke~~.

4. (Currently Amended) The magnetic actuator according to claim 1, ~~wherein~~ including

a second magnetic air gap ~~G2 is formed~~ between ~~said~~ the second position and an end surface of the armature facing ~~said~~ the second position when the armature is held at ~~said~~ the first position, and

a first magnetic air gap ~~G1, differing from said the second magnetic air gap G2 is formed,~~ between ~~said~~ the first position and an end surface of the armature facing ~~said~~ the first position when the armature is held at ~~said~~ the second position.

5. (Currently Amended) The magnetic actuator according to claim 1, wherein the second yoke is oriented along ~~said~~ the first direction.

6. (Currently Amended) The magnetic actuator according to claim 1, wherein the second yoke is oriented along a second direction which is perpendicular to ~~said~~ the first direction.

7. (Currently Amended) The magnetic actuator according to claim 1, wherein the second yoke ~~is made of~~ includes an assembly of laminated metal sheets.

8. (Currently Amended) The magnetic actuator according to claim 1, wherein ~~the cross-sectional area of~~ a lower yoke section of the first yoke ~~is~~ has a smaller cross-sectional area than ~~the cross-sectional area of~~ an upper yoke section of the first yoke.

9. (Currently Amended) The magnetic actuator according to claim 1, wherein the first yoke has stepped surfaces ~~such that~~ creating a partial air gap ~~is created~~ between the first yoke

and the armature when the armature is held at either of the first and second positions.

10. (Currently Amended) The magnetic actuator according to claim 1 further comprising a jack bolt fitted to the second yoke, wherein the permanent magnet is affixed to the second yoke and an air gap between the armature and the permanent magnet can be varied by operating the jack bolt, ~~making it possible to insert so a thin metal sheet can be inserted~~ between the second yoke and the first yoke.

11. (Original) The magnetic actuator according to claim 2, wherein a magnetomotive force produced by the first coil differs from a magnetomotive force produced by the second coil.

12. (Currently Amended) The magnetic actuator according to claim 1, wherein the at least one coil is a set of includes multiple coils.

13. (Currently Amended) The magnetic actuator according to claim 1, wherein ~~the cross-sectional area of~~ an end portion of the armature through which the fluxes pass, ~~the end portion facing the first yoke, is has a smaller than the cross-sectional area of than~~ other portions of the armature through which the fluxes pass.

14. (Currently Amended) The magnetic actuator according to claim 1, wherein the armature ~~is made of~~ includes an assembly of laminated metal sheets.

15. (Currently Amended) The magnetic actuator according to claim 14, wherein the ~~armature is made of an assembly of~~ laminated metal sheets ~~which~~ are bound together with solid end plates ~~placed~~ at both ends of the assembly of the laminated metal ~~sheet assembly~~ sheets.

16. (Currently Amended) The magnetic actuator according to claim 15, ~~wherein the armature is made of an assembly of laminated metal sheets which are bound together with solid end plates placed at both ends of the laminated metal sheet assembly, and wherein peripheral surfaces of each of the end plates are positioned slightly on the inside of end surfaces of the assembly of laminated metal sheet assembly sheets.~~

17. (New) The magnetic actuator according to claim 1, wherein the permanent

In re Appln. of NAKAGAWA et al.
Application No. Unassigned

magnet is located between the first yoke and the second yoke, between elements of the second yoke.